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[0001] Not Applicable

SEQUENCE LISTING

[0002] Not Applicable

BACKGROUND OF THE INVENTION

TECHNICAL FIELD

[0003] The present invention relates to mounts for still cameras and video camera recorders. More particularly, the present invention relates to a camera mount for use in the outdoors.

DESCRIPTION OF RELATED ART

[0004] Still cameras, and most recently video camera recorders, have facilitated the recording and display of flora, fauna, and participants in outdoors recreational activities. During the recording of these images, cameras have been mounted to various devices. These devices include stationary styled mounts with angular adjustment and adjustable arm styled mounts with pannable rotation. The ability to position a camera stationary at various angles, as well as, rotate while recording affords the recorder opportunities to record images from various views.

[0005] Various devices have been utilized for mounting a camera to photograph flora, fauna, and participants in outdoors-recreational activities. One example is the stationary-telescoping tripod styled mount. These mounts generally have three adjustable length legs for support and a camera support capable of rotating or being fixed at a variety of angles. While these mounts function to support a camera for photographing various views while the photographer is sitting or standing firmly upon the ground, there are drawbacks to their use. This type of mount is not easily useable upon a tree stand platform or extremely uneven ground and generally has no means of being fastened to the object it sits upon.

[0006] Another such example is the telescoping tubular styled mounts. While these mounts function to support a camera for photographing various views while sitting or standing upon a tree stand platform, there are drawbacks to their use. Most of these mounts are designed for static attachment to a tree stand platform. They have a telescoping tube attaching a rotating camera support to a base that is bolted to the object on which it sits. This last feature can become a hinderance as the photographer on a tree stand platform has a limited area upon which to sit or stand and these mounts can be difficult to relocate. They are not generally for use in a ground level situation and have no other means of attachment to an object.

[0007] Another such example is the adjustable arm styled mount. These mounts are designed to be statically affixed to an object while allowing the photographer to easily relocate the position of the camera by adjustment of the arm. They do not require an alternative attachment means. While these mounts function to support a camera for photographing various views, there are drawbacks to their use. This style of mount is relatively complicated to use in comparison with the mounts in the previous examples.

[0008] While the different styles of mounts in the previous examples function to support a camera for photographing various views, they have some common drawbacks. These mounts are bulky in size by nature. This may present problems resulting in breakage during transportation in the outdoors. By being bulky in size, they each also have a defined weight that is to be considered when travelling greater distances in the outdoors.

[0009] Therefore, there is a need in the art for an improved camera mount and clamping mechanism, which is lightweight, compact, and easy to relocate.

BRIEF SUMMARY OF THE INVENTION

[0010] The present invention meets the needs in the art by providing an improved camera mount and clamping mechanism for supporting a camera in the outdoors for the recording and display of flora, fauna, and participants in outdoors-recreational activities.

[0011] The present invention has a rotational ability built into the camera mount's support plate comprising a semi-spherical projection having parallel concave and convex surfaces at its underside. The support plate's semi-spherical projection further defines a large radius hole for a threaded fastener to extend through that allows clearance around the threaded fastener. This clearance defines the maximum angle of rotation attainable during useage of the camera mount. A semi-spherical pivot with a centrally located hole for a fastener to extend through and has a convex surface that is cooperatively mated to the concave surface of the semi-spherical projection.

[0012] An upper clamping plate defining a cylindrical pivot seat having a concave surface and a

hole for a threaded fastener to extend through is cooperatively mated to the convex surface of the semi-spherical projection. A threaded fastener extends through the aforementioned parts of the invention and with the semi-spherical surfaces of the pivot and pivot seat and being coaxially static to the fastener allow the support plate to rotate upon the support plate's semi-spherical projection.

[0013] The present invention also provides an improved clamping mechanism whereby the camera mount can be disposed upon various square, rectangular, and round shaped shafts allowing great flexability of use. The clamping mechanism has an upper clamping plate and a lower clamping plate. The upper clamping plate defining a planer surface with a perpendicular lip, and the planer surface bears on the surface of the desired shaft the camera mount is to be disposed upon. The lower clamping plate defining two horizontally parallel planer surfaces, above a centrally located horizontal plane, with two opposing surfaces perpendicular to and between the two horizontally parallel planer surfaces further defining a notch which forms the first bearing surface defined by the lower clamping plate.

[0014] The upper clamping plates bearing planer surface and lower clamping plates bearing planer surface each further define a V-shaped groove across their face, that are coaxially aligned, comprising additional surfaces to bear upon the desired shaft.

[0015] The lower clamping plate also defines a horizontal planer surface below the centrally located horizontal plane which contains a radial groove across it's face that when the lower clamping plate is inverted, is coaxially aligned with the upper clamping plates V-shaped groove, comprising additional surfaces to bear upon the desired shaft.

[0016] The present invention also provides ease of relocation by further comprising a clamping compressive tension adjustment knob that has coaxially aligned threads that cooperatively mate with the threads of the threaded fastener. With the fastener extending through the pivot, support plate, upper clamping plate, lower clamping plate, and threaded knob, all parts of the camera support and clamping mechanism comprise the camera mount and are able to be easily disposed upon or removed from the desired shaft by tightening or loosening the knob and increasing or relieving the compressive tension of the clamping mechanism.

[0017] The present invention is compact and by being so is also lightweight providing ease of transportation.

[0018] Upon reading the claims and detailed description of the invention, and upon viewing the drawings, the objects, features, and advantages of the present invention will be apparent.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] FIG. 1 is a top view in perspective of a preferred embodiment of the camera mount support plate, according to my new invention.

[0020] FIG. 2 illustrates a bottom view in perspective of the of the camera mount support plate.

[0021] FIG. 3 illustrates a perspective view of the semi-spherical pivot.

[0022] FIG. 4 illustrates a perspective view of the upper clamping plate.

[0023] FIG. 5 illustrates a perspective view of a first position of the lower clamping plate.

[0024] FIG. 6 illustrates a perspective view of a second position of the lower clamping plate.

[0025] FIG. 7 illustrates an exploded view in perspective, of the preferred embodiment of a camera mount, according to my new invention.

[0026] FIG. 8 illustrates a perspective view of the preferred embodiment of a camera mount in operation, according to my new invention.

DETAILED DESCRIPTION OF THE DRAWINGS

[0027] Referring now in more detail to the drawings where like parts are identified alike, FIG. 1 illustrates a top perspective view of the camera mounts support plate 1 for use in the outdoors, according to my new invention. The support plate 1, an injection molded thin-part that defines a horizontal planer surface 2 for supporting a camera (not illustrated), and an angled handle 3 extending from one end upon a centrally located horizontal axis. The support plate 1 defines a hole 5 along a centrally located horizontal axis. The support plate 1 defines radial inner and outer corners 41 that have equal radii. The support plate's angled handle 3 defines radial outer corners 42. The support plate 1 defines a lip 4 around the support plate 1 and angled handle 3 perimeter that is perpendicular to the support plate's horizontal planer surface 2. The support plate's lip 4 that is perpendicular the support plate's horizontal planer surface 2 defines a radial edge 43 around the support plate 1 and angled handle 3 perimeter. The support plate 1 defines a semi-spherical projection 9 along a centrally located horizontal axis, with its radial axis disposed on a plane

vertically below and parallel to the support plate's horizontal planer surface 2. The semi-spherical projection 9 defines a concave surface 10.

[0028] FIG. 2 illustrates a bottom perspective view of the camera mount support plate 1, an injection molded thin part comprises a hole 5 that defines a perpendicular cylindrical side 6 for a threaded fastener (not illustrated) to extend through for statically attaching camera (not illustrated) to support plate 1. The cylindrical side 6 defines a vertically centered cylindrical rib 8 to retain the threaded fastener (not illustrated).

[0029] The support plate 1 further comprises a semi-spherical projection 9 that defines a convex surface 11 which is parallel to the semi-spherical projections concave surface 10. The semi-spherical projection 9 defines a centrally located hole 12 for a threaded fastener (not illustrated) to extend through. The support plate semi-spherical projection's hole 12 partially removes the side of the semi-spherical projection 9 that is parallel to the support plate's horizontal planer surface 2 at an angle originating from the radial axis of the semi-spherical projection 9 defining clearance around the threaded fastener (not illustrated).

[0030] The support plate 1 defines structural ribs 44 that connect the semi-spherical projection 9, the hole's perpendicular cylindrical side 6, and the support plate and angled handles perimeter lip 4 in a static relationship. The support plate 1 defines a structural rib 45 to strengthen the angled handle 3.

[0031] FIG. 3 illustrates a perspective view of the camera mount semi-spherical pivot 14, an injection molded thin part that defines a convex outer surface 15 that bears against the concave

surface of the support plate's semi-spherical projection (not illustrated). The semi-spherical pivot 14 defines a centrally located hole 16 for a threaded fastener (not illustrated) to extend through.

[0032] The semi-spherical pivot 14 defines a concave side 17 by a first face 18 and a second face 19 which are parallel to a plane on a horizontal axis and perpendicular to the support plate's hole 16, with the first face 18 disposed on a horizontal plane which is vertically above the horizontal plane of the second face 19. The concave side 17 forms a relief to receive a hexagonal fastener head (not illustrated). The semi-spherical pivot 14 defines a polar array of six ribs 21, which originate at the outermost radius of the concave side 17 and project centrally upon a vertical axis and perpendicular to the hexagonal fastener head (not illustrated), restricting rotational movement of the hexagonal fastener head (not illustrated).

[0033] FIG. 4 illustrates a perspective view of the camera mount upper clamping plate 22, an injection molded thin-part that defines a horizontal planer surface 24 that bears against the surface of the desired object (not illustrated) the upper clamping plate 22, is to be disposed upon. The upper clamping plate's horizontal planer surface 24 defines mirrored angled surfaces 25 by a first face and a second face which are mirrored upon a vertical axis that is perpendicular to the upper clamping plate's horizontal planer surface 24. The angled surfaces 25 are disposed on a plane that is vertically above and parallel to the upper clamping plate's horizontal planer surface 24 and the mirrored angled surfaces 25 bear against the surface of a desired square, rectangular, or round shaped shaft (not illustrated) the upper clamping plate 22, is to be disposed upon.

[0034] The upper clamping plate 22 defines a lip 26 perpendicular to the upper clamping plate's horizontal planer surface 24. The upper clamping plate 22 defines a hole 27 along a centrally

located horizontal axis and perpendicular to the upper clamping plate's horizontal planer surface 24 for threaded fastener (not illustrated) to extend through.

[0035] The upper clamping plate 22 defines radial outer corners 47 that have equal radii. The upper clamping plate 22 defines radial outer corners 48 that have equal radii. The upper clamping plate 22 defines mirrored ribs 46 to strengthen the lip 26.

[0036] The upper clamping plate 22 defines a cylindrical pivot seat 28 having a first cylindrical side extending to a horizontal plane vertically above and parallel to the upper clamping plate's horizontal planer surface 24 on an axis that is perpendicular to the upper clamping plate's horizontal planer surface 24, and its radial axis is same as the fastener hole 27 defining a lip 29 around the fastener hole 27 perimeter.

[0037] The upper clamping plate's cylindrical pivot seat 28 defines a second cylindrical side 30 parallel to the fastener hole lip 29 extending from the upper clamping plate's horizontal planer surface 24 to a horizontal plane vertically above the horizontal plane the fastener hole lip 29, and its radial axis is same as the fastener hole 27. The upper clamping plate's cylindrical pivot seat 28 defines a polar array of six ribs 31, which originate at the innermost radius of cylindrical side 30 and project centrally upon a vertical axis and perpendicular to the upper clamping plates horizontal planer surface 24 to the outermost radius of the fastener hole lip 29. The cylindrical pivot seat's polar array of six ribs 31 define a concave surface 32 that bears against the semi-spherical projection's convex surface (not illustrated) by originating at the upper clamping plates horizontal planer surface 24 and extending vertically to the horizontal plane of the fastener hole lip 29 and

continuing on a radial axis parallel to the radial axis of the semi-spherical projection (not illustrated) to the horizontal plane of the cylindrical side 30.

[0038] FIG. 5 illustrates a perspective view of the camera mount lower clamping plate 23, an injection molded thin-part that defines opposing horizontal planer surfaces by a first face and a second face that are parallel upon a vertical axis to a plane on a horizontal axis with the first face being the lower clamping plates first horizontal planer surface 33 and the second face being the lower clamping plates second horizontal planer surface 34.

[0039] The lower clamping plate 23 defines radial outer corners 49 that have equal radii. The lower clamping plate 23 defines radial outer corners 50 that have equal radii.

[0040] The lower clamping plate 23 defines a notch with a horizontal planer surface 35 by opposing sides with a first face and a second face that are parallel to a plane on a horizontal axis, when the first face is the lower clamping plate's first horizontal planer surface 33 and the second face is on a horizontal plane vertically below the plane of the lower clamping plate's first horizontal planer surface 33. The opposing sides define a notch, and the lower clamping plate's second face is the notch's horizontal planer surface 35 that bears against the surface of the desired square, rectangular, or round shaped shaft (not illustrated) the lower clamping plate 23, is to be disposed upon.

[0041] The lower clamping plate notch's horizontal planer surface 35 defines mirrored angled surfaces 36 by a first face and a second face that are mirrored on a vertical axis located below and perpendicular to the lower clamping plate notch's horizontal planer surface 35, and the mirrored

angled surfaces 36 bear against the surface of the desired square, rectangular, or round shaped shaft (not illustrated) the lower clamping plate 23, is to be disposed upon.

[0042] FIG. 6 illustrates a perspective view of the camera mount lower clamping plate's second horizontal planer surface 34 defining a cylindrical surface 37 on a radial axis with the radial axis originating on the horizontal axis of the lower clamping plate's second horizontal planer surface 34, and the lower clamping plate's cylindrical surface 37 bears against the surface of the desired square, rectangular, or round shaped shaft (not illustrated) the lower clamping plate 23, is to be disposed upon.

[0043] The lower clamping plate defines a hole 38 on a vertical axis along a centrally located horizontal axis perpendicular to the lower clamping plate's horizontal planer surfaces 33 and 34 for the threaded fastener (not illustrated) to extend through.

[0044] FIG. 7 illustrates an exploded perspective view of the preferred embodiment of a camera mount 51, according to my new invention. The camera mount 51comprises a threaded fastener 13, a support plate 1 with a semi-spherical projection 9, a semi-spherical pivot 14, a clamping mechanism 39 that defines an upper clamping plate 22 and a lower clamping plate 23, a threaded knob 40, and a threaded fastener 7.

[0045] A camera (not illustrated) is statically attached to the support plate 1 with threaded fastener 7extending through the support plate's hole 5. The semi-spherical pivot 's convex outer surface 15 bears against the support plate semi-spherical projection's concave surface 10 and the support plate semi-spherical projection's convex surface (not visible) bears against the upper clamping

plate's cylindrical pivot seat 28 allowing the support plate to be rotatable.

[0046] The threaded fastener 13 extends through the semi-spherical pivot's hole 16, the support plate semi-spherical projections hole 12(not visible), the upper clamping plate's hole 27, the lower clamping plate's hole 38, and the threaded knob 40 providing means for connecting the clamping mechanism 39 to the support plate 1.

[0047] FIG. 8 illustrates a perspective view of the preferred embodiment of a camera mount 51, according to my new invention.

[0048] In operation a camera 52 (for illustration) is statically attached to the support plate 1 with threaded fastener 7 (not visible). The camera mount 51 is disposed upon a square shaft 53 (for illustration).

[0048] While the clamping mechanism 39 is disposed upon the square shaft 53(for illustration), the compressive tension of the clamping mechanism 39 and rotation angle of the support plate 1 are controlled by loosening or tightening the threaded knob 40 on the threaded fastener 13. Depending on the amount of this tension, the support plate 1 may be held statically or be rotatable.

[0049] In the foregoing specification, the preferred embodiments, modes of operation, and principles of the present invention have been disclosed. The invention should not be limited by the previous disclosures as they are intended for illustration, and not for restriction. Those skilled in the art may change or vary the present invention without departing from the true intention of the present invention described in the claims that follow.